NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WINDBREAK/SHELTERBELT ESTABLISHMENT

(Feet)

CODE 380

DEFINITION

Linear plantings of single or multiple rows of trees or shrubs or sets of linear plantings.

PURPOSES

- To reduce soil erosion from wind.
- To protect plants from wind related damage.
- To alter the microenvironment for enhancing plant growth.
- To manage snow deposition.
- To provide shelter for structures, livestock, and recreational areas.
- To enhance wildlife habitat by providing travel corridors.
- To provide a tree or shrub product.
- To provide living noise screens.
- To provide living visual screens.
- To provide living barriers against airborne chemical drift.
- To delineate property and field boundaries.
- To improve irrigation efficiency.
- To enhance aesthetics.
- To increase carbon storage.

CONDITIONS WHERE PRACTICE APPLIES

On any areas where linear plantings of woody plants are desired and suited.

CRITERIA

General Criteria Applicable to All Purposes

The location, layout, and density of the planting will accomplish the purpose and function intended within a 20-year period.

The maximum design height (H) for the windbreak or shelterbelt shall be the expected height of the tallest row of trees or shrubs at age 20 for the given site.

Species must be adapted to the soils, climate, and site conditions.

Species shall be suited for the planned practice purpose(s).

Site preparation shall be sufficient for establishment and growth of selected species, not contribute to erosion, and be appropriate for the site.

Only viable, high quality, and adapted planting stock or seed will be used.

The planting shall be done at a time and manner to insure survival and growth of selected species.

Avoid planting trees or shrubs where they will interfere with structures and above or below ground utilities.

Moisture conservation or supplemental watering shall be provided for plant establishment and growth where natural precipitation is too low for the selected species.

Comply with applicable laws and regulations.

Additional Criteria to Reduce Wind Erosion; Protect Growing Plants

The windbreak will be oriented as close to perpendicular to the troublesome wind as possible.

The interval between windbreaks shall be determined using current, approved, wind erosion technology. Interval widths shall not exceed that permitted by the soil loss tolerance (T), or other planned soil loss objective(s). Calculations shall account for the effects of other practices in the conservation management system.

The wind erosion control system should consider temporary measures to supplement the windbreak until it is fully functional.

Plants are protected within an area 10 to 30 times the design height (H) on the leeward side and 2 to 5 times the design height (H) on the windward side of the windbreak.

Additional Criteria to Manage Snow Deposition

The windbreak will be oriented as close to perpendicular to the snow-bearing wind as possible.

For snow distribution across a field, the windbreak density will be between 25 to 35 percent. The interval between barriers will not exceed 20H.

For snow accumulation, the barrier density will be between 50 to 60 percent.

Windbreaks will be located so that snow deposition will not adversely impact the area to be protected.

Where water erosion and/or runoff from melting snow is a hazard, it shall be controlled by supporting practices.

Additional Criteria to Provide Shelter for Structures, Livestock, and Recreational Areas

The planting will be oriented as close to perpendicular to the troublesome wind as possible.

For wind protection, the barrier density will be between 60 to 80 percent. The area to be protected will fall within 2H to 5H.

Drainage of snowmelt from the windbreak shall not flow across the livestock area.

Drainage of livestock waste from the livestock area shall not flow into the windbreak.

Additional Criteria for Noise Screens

Noise screens shall be at least 80 percent dense, as tall as, and as close to the noise source as practicable.

The length of the noise screen should be twice as long as the distance from the noise source to the receiver.

For high-speed traffic noise, the barrier needs to be 65 to 100 feet wide. For moderate speed traffic noise, the barrier width can be 20 to 25 feet.

Species selected will be tolerant to noxious emission and sand or salt spray in traffic areas.

Additional Criteria for Visual Screens

Visual screens shall be located as close to the observer as possible.

Additional Criteria for Living Barriers for Airborne Chemical Drift

Only evergreen species shall be used.

Additional Criteria for Providing or Enhancing Wildlife Habitat or Travel Corridors

Plant species selection shall benefit targeted wildlife species.

Design dimensions of the planting shall be adequate for targeted wildlife species.

Additional Criteria for Improving Irrigation Efficiency

For sprinkler irrigation systems, the windbreak shall be as tall as the sprinkler heads.

The barrier shall not interfere with the operation of the irrigation system.

Additional Criteria to Enhance Aesthetics

To enhance aesthetics use evergreen species or species with features such as showy flowers, brilliant fall foliage, or persistent colorful fruits.

CONSIDERATIONS

Spacing between windbreaks and rows of windbreaks may be adjusted, within limits of the

criteria above, to accommodate widths of equipment.

Selection of plants for use in windbreaks should favor species or varieties tolerant to herbicides used in the area.

Plants that may be alternate hosts to undesirable pests should be avoided.

All plantings should complement natural landscape features.

Tree or shrub rows should be oriented on or near the contour where water erosion is a concern. Where water erosion and/or runoff from melting snow is a hazard, it should be controlled by supporting practices.

Wildlife should be considered when selecting tree or shrub species. Species diversity should be considered to avoid loss of function due to species-specific pests.

Consideration should be given to adverse offsite effects.

Plants established in cropping systems should have root systems that do not affect crop growth and/or spread from root sprouts.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan or other acceptable documentation.

OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation) and repair and upkeep of the practice (maintenance):

Replacement of dead trees or shrubs will be continued until the barrier is functional.

Supplemental water will be provided as needed.

Thin or prune the barrier to maintain its function.

The trees and shrubs will be inspected periodically and protected from adverse impacts including insects, diseases, or competing vegetation. The trees or shrubs will also be protected from fire and damage from livestock and wildlife.

Periodic applications of nutrients may be needed to maintain plant vigor.

Noxious plants will be controlled in accordance with State law.